

1 42233/MJM/A717
FINLEY 2-5

WHAT IS CLAIMED IS:

5 1. A method for joining a semiconductor die to a leadframe comprising the steps of:

providing a semiconductor die and a leadframe;

forming at least three pedestals raised above a surface of said leadframe in a mounting area adapted for receiving said semiconductor die attached thereto, each of
10 said pedestals having substantially the same pedestal height;

introducing an adhesive material onto said mounting area, said adhesive material including an average thickness being at least as great as said pedestal height; and

15 joining said semiconductor die to said mounting area such that said semiconductor die contacts each of said pedestals and said adhesive material.

2. The method as in claim 1, further comprising the step of heating to urge said adhesive material to deform and in which said step of joining includes urging said adhesive material to solidify.

20 3. The method as in claim 1, in which said adhesive material comprises an epoxy.

4. The method as in claim 1, in which said adhesive material comprises a thermally curable epoxy and said step of joining includes heating to cure said epoxy.

25 5. The method as in claim 1, in which said pedestals each include a height within the range of 1-2 mils.

30 6. The method as in claim 1, wherein said leadframe is formed of a malleable material and said step of forming comprises mechanically stamping said leadframe to form said pedestals as integral portions of said leadframe which protrude from said surface.

35 7. The method as in claim 1, in which each of said pedestals includes a shape being one of cylindrical and conical.

5 8. The method as in claim 1, in which said step of providing includes providing said semiconductor die having a top including a semiconductor device formed thereon, sides, and a bottom for contacting said pedestals, and in which said step of introducing includes introducing a deformable adhesive material to a sufficient thickness such that said step of joining urges portions of said adhesive material to extend at least partially along said sides of said semiconductor die when said bottom contacts said pedestals.

10 9. The method as in claim 1, in which said semiconductor die includes an integrated circuit formed on a top surface thereof, and said step of joining includes joining a bottom surface of said die to said leadframe such that said bottom surface contacts each of said pedestals.

15 10. A method for joining a semiconductor chip to a leadframe comprising the steps of:

providing a leadframe and a semiconductor chip;

20 forming at least three pedestals raised above a surface of said leadframe in a mounting area adapted for receiving said semiconductor chip attached thereto, each of said pedestals having substantially the same pedestal height;

introducing a viscous solder material onto said mounting area; and

25 joining said semiconductor chip to said mounting area of said leadframe such that said semiconductor chip contacts each of said pedestals and said solder.

30 11. An assembly comprising a semiconductor die attached to a surface of a leadframe by an adhesive, said leadframe including at least three pedestals one of protruding from and formed over said surface, each of said pedestals having substantially the same pedestal height, and said semiconductor die contacting each of said pedestals.

12. The assembly as in claim 11, in which said pedestal height lies within the range of 1-2 mils.

1 42233/MJM/A717
FINLEY 2-5

5 13. The assembly as in claim 11, in which said pedestals each include a top portion which contacts said semiconductor die and said top portion includes an area within the range of 490 micron² and 2000 micron².

10 14. The assembly as in claim 11, in which each of said pedestals are conical in shape and include a base coincident with said surface and an apex which contacts said semiconductor die.

15 15. The assembly as in claim 11, in which said semiconductor die includes an area which lies within the range of 256 mils² to 1 inch².

20 16. The assembly as in claim 11, wherein said pedestals each comprise raised portions of said leadframe.

25 17. The assembly as in claim 11, wherein each of said pedestals are discrete members joined to said surface.

30 18. The assembly as in claim 11, wherein said leadframe is formed of copper.

35 19. The assembly as in claim 11, wherein said adhesive comprises an epoxy.

20 20. The assembly as in claim 11, wherein said pedestals are substantially cylindrical in shape and include substantially flat tops which contact said semiconductor die.

25 21. The assembly as in claim 11, in which said semiconductor die includes an integrated circuit formed thereon, an opposed bottom surface contacting said adhesive and said pedestals and facing said leadframe, and sides, and said adhesive extends at least partially up said sides.

30 22. The assembly as in claim 11, in which said adhesive laterally surrounds each of said pedestals and is interposed between said semiconductor die and said

35

1 42233/MJM/A717
FINLEY 2-5

surface, has a thickness substantially equal to said pedestal height, and therefore contacts and adheres to each of said semiconductor die and said leadframe.

5 23. The assembly as in claim 22, in which said semiconductor die includes a top surface including circuitry thereon, an opposed bottom surface contacting said adhesive and said pedestals and facing said leadframe, and sides, and said adhesive extends at least partially up said sides.

10 24. The assembly as in claim 22, in which said adhesive is characterized as being void-free between said semiconductor die and said surface.